

## ABSTRACT

The invention provides an optical waveguide material whose refractive index can be tailored without changing the ratio of Ta and Nb. An optical waveguide of this invention comprising an under-clad layer 1 and a core 2 that is formed on the under-clad layer 1 and has a higher refractive index than that of the under-clad layer 1 is shown. For example, KTN ( $\text{KTa}_{1-x}\text{Nb}_x\text{O}_3$ ) is used as the core 2, and a material that is obtained by substituting at least one element selected from the group consisting of Zr, Hf, and Sn for a portion of one element of the constituent elements of KTN and has the same perovskite type crystal structure as KTN is used as the clad. The refractive index of KTN can be reduced considerably, and this controllability widens the degree of freedom in the design of optical waveguide devices.